What is claimed is:

1. An microfluidic analytical device comprising:

a microfluidic separation column containing stationary phase material and adapted to perform a pressure-driven chromatographic separation process;

an optical detection region in fluid communication with the microfluidic separation column, the optical detection region being bounded by at least one substantially optically transmissive material; and

a porous material disposed downstream of the optical detection region, the porous material permitting liquid flow therethrough at an operating pressure.

2. The device of claim 1 wherein the porous material includes a substantially planar porous membrane.

3. The device of claim 2 wherein the membrane is a permeable polyolefin membrane.

4. The device of claim 1 wherein the porous material includes a porous monolith.

5. The device of claim 4 wherein the porous monolith is polymerized within the device.

6. The device of claim 1 wherein the device is substantially planar and comprises a plurality of substantially planar device layers.

7. The device of claim 1 wherein the plurality of device layers comprises adhesiveless polymeric layers that are interpenetrably bound together to form a substantially sealed microstructure.

8. The device of claim 7 wherein each device layer of plurality of device layers is substantially metal-free.

9. The device of claim 6 wherein the plurality of substantially planar device layers includes a plurality of stencil layers.

10. The device of claim 9 wherein the porous material is a porous membrane disposed between at least two stencil layers of the plurality of stencil layers.

11. The device of claim 1 wherein the stationary phase material includes packed particulate matter.

12. The device of claim 1 wherein the microfluidic analytical device is adapted to withstand an internal pressure of at least about 100 psi and remain substantially sealed.

13. A microfluidic analytical device comprising:

a plurality of microfluidic separation columns each containing stationary phase material;

a plurality of optical detection regions, each optical detection region being associated with and in fluid communication with a different microfluidic separation column of the plurality of separation columns, each optical detection region being bounded by at least one substantially optically transmissive material; and

at least one porous material disposed downstream of the plurality of optical detection windows, the at least one porous material permitting liquid flow therethrough at an operating pressure.

14. The device of claim 13, further comprising a fluidic distribution network in fluid communication with the plurality of microfluidic separation columns.

15. The device of claim 13 wherein the device is substantially planar and comprises a plurality of substantially planar device layers.

16. The device of claim 13 wherein the plurality of device layers comprises adhesiveless polymeric materials that are interpenetrably bound together to form a substantially sealed microstructure.

17. The device of claim 16 wherein each device layer of plurality of device layers is substantially metal-free.

18. The device of claim 15 wherein the plurality of device layers includes a plurality of stencil layers.

19. The device of claim 18 wherein the at least one porous material includes a porous membrane disposed between at least two stencil layers of the plurality of stencil layers.

20. An analytical system comprising:

the device of claim 13;

a fluidic distribution network in fluid communication with the plurality of microfluidic separation columns;

a common mobile phase supply source in fluid communication with the plurality of microfluidic separation columns through the fluidic distribution network;

at least one illumination source in optical communication with the plurality of optical detection regions; and

at least one optical detector in optical communication with the plurality of optical detection regions.

21. A microfluidic device comprising:

a plurality of substantially planar device layers defining a first aperture, a second aperture, and an optical detection region bounded along at least one surface by a substantially optically transmissive material, the optical detection region being in fluid communication with the first aperture and the second aperture; and

a substantially planar porous material disposed between the first aperture and the second aperture, the porous material permitting liquid flow therethrough and being adapted to permanently elevate the backpressure within the optical detection region.

22. The device of claim 21, further comprising at least one microfluidic separation column adapted to perform pressure-driven liquid chromatography, the separation column being disposed upstream of the optical detection region.

23. The device of claim 21 wherein the plurality of substantially planar device layers includes a plurality of stencil layers.

24. A liquid chromatography system comprising:

a plurality of microfluidic separation columns adapted to perform pressure-driven liquid chromatographic separation;

an illumination source;

an optical detector;

a plurality of optical detection regions disposed downstream of the plurality of separation columns, each optical detection region of the plurality of optical detection regions being in fluid communication with one separation column of the plurality of separation columns, and each optical detection region being in optical communication with the illumination source and optical detector; and

at least one porous element disposed downstream of the plurality of optical detection regions and in fluid communication with the plurality of optical detection regions, the at least one porous element being adapted to elevate the backpressure within the plurality of optical detection regions.

25. The system of claim 24, further comprising a mobile phase supply system.